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The JOURNAL of GEOGRAPHY

VOLUME XXVII DECEMBER, 1928 NUMBER 9

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Wilmington, Delaware, is situated upon three rivers. The historic Brandywine divides the city. On the south bank of the Christiana is located the Marine Terminal, while just east of the city ebbs and flows the Delaware, the Clyde of America. Only the Brandywine is shown in the picture.

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Mr. Brown is a professor of geography in Rhode Island College of Education, Providence, Rhode Island; associate editor of the *Journal of Geography;* and a frequent contributor to numerous geographic magazines. His more recent contributions include Cotton Manufacturing: North and South, which appeared in *Economic Geography;* Utilization of the Waters of the Colorado River, in the *Geographical Review;* Explorations of Interest to Americans, in the *American Yearbook.*

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Dr. Ashton was an instructor of geography in the University of Illinois at the time of her sudden and untimely death last spring. A companion article entitled, "The Geography of Syria" appeared in the May number of the *Journal.* Miss Ashton was an able and energetic worker in her chosen field and a frequent contributor to the *Journal.* Geography and geographic education have suffered a distinct loss.

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VOLUME XXVII DECEMBER, 1928 NUMBER 9

THE TEXTILE INDUSTRIES

ROBERT M. BROWN
College of Education, Providence, R.I.

The textile industries include the manufacturing establishments producing woven or felted cloths of any material or style of weaving. The bulk of the production is from the raw material to cotton, wool, silk, flax, hemp and jute. It is in the value of products in the United States, second in rank among industries, being exceeded by the group "Food and Kindred Products" (1923) (Table 1).

TABLE 1

	No. of establishments	*Wage earners*	*Value of product in millions*
1. Food and Kindred Products	51,847	682,137	9,524
2. Textiles and their products	26,797	7,719,434	9,487
3. Iron and steel and their products	6,358	892,660	6,828
4. Chemical and Allied products	8,832	384,493	5,706
5. Transportation equipment	3,873	606,328	5,333
6. Machinery not included in 5	12,147	907,707	4,727
7. Paper and Printing	25,775	526,795	3,769
8. Lumber and allied products	21,674	931,748	3,633

COTTON MANUFACTURING

Unlike the products of wool and silk, cotton manufacturing did not develop in cotton growing lands. This was probably because the fiber is grown in semi-tropical lands where the people have strong agricultural tendencies and undeveloped instincts for manufacturing. Furthermore cotton cloth entered a field largely occupied by woolens and linens and it was necessary by concentration of efforts, by inventions of machinery and by skill of operatives to reduce the cost of production in order to be readily marketable. This resulted in placing the entire manufacture of cotton cloth in the hands of invested capital in thickly settled communities.

Cotton manufactures are classified under one of three subdivisions: (1) cotton goods which includes all mills engaged in

the spinning and weaving of piece goods, (2) cotton small wares, including those producing tapes, braids, belts, edging and the like, and (3) cotton lace goods.

The manufacture of cotton goods was undertaken early in the history of manufacturing by England and it obtained an extensive market which its colonial possessions and its merchant marine gave a degree of permanence. It is estimated today that Great Britain manufactures 40 per cent of the world's supply of cotton goods. The rest of Europe and the United States produce about 25 per cent each, leaving 10 per cent to be divided between India, Japan, China, Canada and Mexico.

The manufacture of cotton goods is then a rather widely distributed occupation among temperate and semi-tropical peoples. In 1926 the raw cotton yield of the world was 27,813,000 bales (478 lbs. lint) distributed as follows:

TABLE 2

United States	17,755,000 bales	Brazil	449,000 bales
India	4,230,000 bales	Mexico	396,000 bales
Egypt	1,695,000 bales	Peru	245,000 bales
China	1,335,000 bales	All others	970,000 bales
Russia	738,000 bales		

Of this amount Europe consumed 42 per cent, the United States 30 per cent, and other countries 28 per cent. The distribution of cotton mills among the more prominent nations of the world is tabulated:

TABLE 3

Country	*Spindles in thousands*	*No. of Mills*
Great Britain	60,465	1,865
United States	37,483	1,706
Germany	10,900	372
Russia	10,827	167
France	9,613	580
India	8,714	334
Japan	5,680	247
Italy	5,000	700
China	3,588	118
Czechoslovakia	3,600	86
Brazil	2,528	329
Belgium	2,132	225

It will be noted that the size of the manufacturing plants vary in the different countries; Belgium has 2,132,000 spindles in 225 mills while Russia has 10,827,000 in 167.

COTTON MANUFACTURING IN UNITED STATES

The first completely equipped cotton mill in the United States was erected at Pawtucket, Rhode Island, in 1790 and in 1926 there were 1,706 mills in the United States distributed for the most part in the Eastern States.

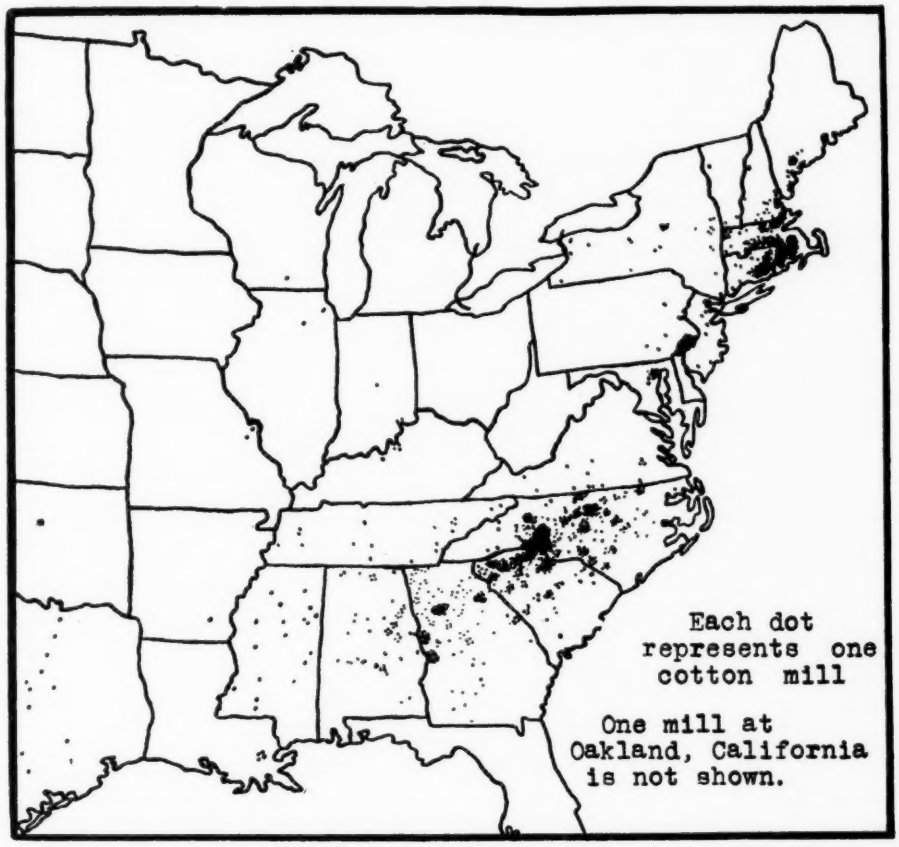

Fig. 1. Sketch map showing location of cotton mills. After Atlas of American Agriculture.

The prominent feature of cotton manufacturing in the United States during recent years has been the great increase of manufacturing in the cotton-growing states. In 1880 New England had 8,632,000 spindles, the South 561,000 and the other states, 1,460,000. In 1924 the number of active spindles in the cotton-growing states exceeded for the first time the number in the New England States. In 1880 New England operated 81 per cent of the spin-

dles of the country, and 1924 but 48 per cent. While Massachusetts maintains its place as the premier cotton manufacturing state, the other New England States have yielded places to the cotton growing states; and the states line up in order of spindles thus: Massachusetts, North Carolina, South Carolina, Rhode Island and Georgia.

There are seventy counties in the United States which have more than 100,000 cotton spindles,[1] and these seventy have 83 per cent of the number of spindles for the United States. The distribution of these counties is: 18 in North Carolina, 14 in South Carolina, 8 in Georgia, 7 in Massachusetts, 5 in Alabama, 4 in Maine, 3 each in New Hampshire and Rhode Island, 2 each in Connecticut and New York and 1 each in Louisiana, New Jersey, Tennessee and Virginia. The leading county in the North and in fact the country, Bristol, Massachusetts, has 7,702,569 cotton spindles, which is 20.8 per cent of the total for the United States. This county includes the cities of New Bedford and Fall River. Gaston County in North Carolina, the leading county in the South, has 901,492 cotton spindles.

THE ADVANTAGE OF THE SOUTH

The increase in cotton manufacturing in the cotton-growing states is not due to its nearness to raw materials. One example must suffice. In North Carolina[2] about one-fourth of the cotton used in the mills is brought from other states, particularly Mississippi, and the price of all the cotton is determined by the Mississippi price plus the freight charge from Mississippi to whatever town it may be delivered.

The transportation cost of raw Texas cotton to New Bedford and Fall River at tide water is no greater than it is to many mills of South Carolina in the Piedmont belt where transshipment from barge to railroad is necessary. The Greenville, South Carolina, mills making fancy dress goods pay the same amount for freight on raw materials as do the New England mills producing the same class of goods. Moreover whenever there is an advantage to the southern states because of "back door" cotton, it is generally

[1] See Cotton Production and Distribution season 1921-1922 Bull. 150, Dept. of Commerce, Bureau of Census, Washington. 1923.

[2] M. T. Copeland. 1912. The Cotton Manufacturing Industry of the United States.

equalized by the additional freight charges on their marketable products.

The increase in Southern manufacturing is not due to any power advantages since there has been in New England ample power for all purposes. The rates are only slightly in favor of the South. The average rate per kilowatt hour for New England is 2.2 cents;

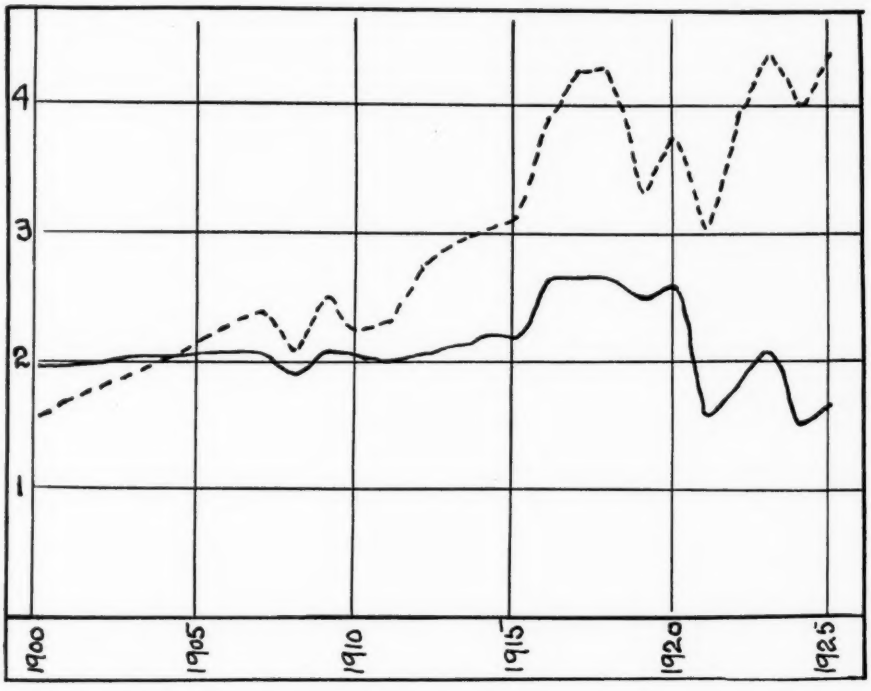

Fig. 2. Active spindles in New England States (continuous line) and in the Cotton growing states (broken line). Note the decline in New England beginning in 1921 when a falling market made competition keen, and the persistent increase in the South. In 1925 for the first time the South exceeded New England in the number of active spindles. Unit is 1,000,000 spindles.

and for the South, 1.8 cents. The highest rates in New England are, Connecticut, 2.4 cents, and Massachusetts, 2.4 cents; in the South, Texas, 2.5 cents; Mississippi, 3.2 cents, and Florida, 2.9 cents. The lowest rate in New England is Maine, 1.1 cents, and in the South is Georgia and South Carolina, .9 cents. A New England manufacturer states that power contributes only 2½ per cent to the total cost of the finished product and that the difference between the North and the South in the case of power costs is too minute to account for the growth of the southern industries.

The advantages of southern cotton mills rests today in two things; the smaller wages paid the operatives and the longer hours of work.

In Alabama the average earning per hour of weavers is $.255, in North Carolina $.350, in Connecticut $.452 and in Massachusetts $.460. Frame spinners in Alabama have an average earning per week of $8.54, while in Massachusetts they receive $17.41.

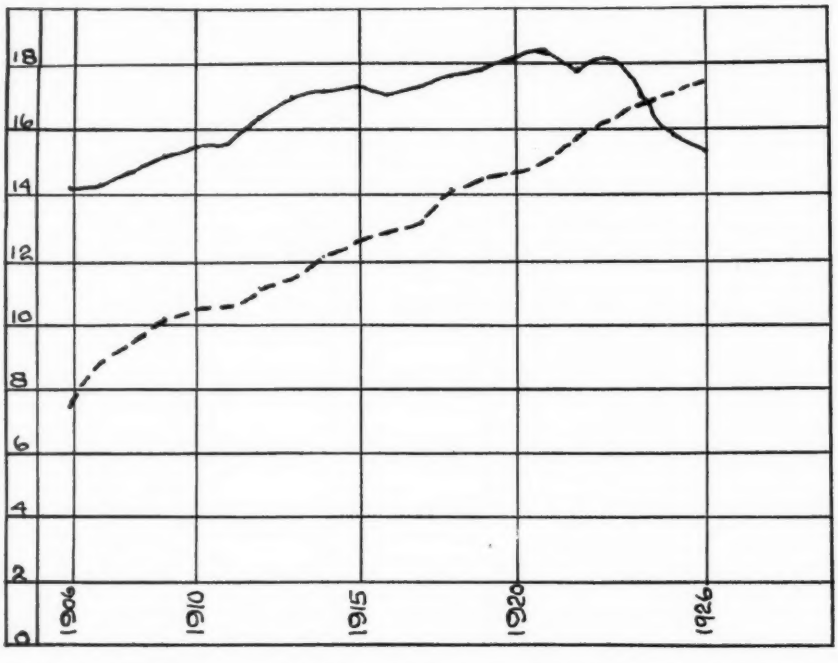

Fig. 3. Consumption of Cotton: North (continuous line) and South (broken line). Unit is 1,000,000 bales. The northern manufacturer attempted early to equalize his transportation costs by making fine cotton goods using a minimum of raw material leaving to the Southern States the course goods with a maximum of raw material. Thus the Southern States exceeded the New England States in cotton consumption first in 1904.

The difference in the hours may be illustrated by Rhode Island and Georgia. The former state has a greater number of spindles in place than the latter, yet Georgia in 1923 shows 2,300,000,000 more spindle hours than the former. Connecticut weavers worked on the average five hours less per week in 1922 than Alabama weavers and earned on the average $9.00 more.

It is well within the bounds of probability to find in these two items the longer operating time of southern mills and the lower

scale of wages, the real advantages of the mills in the cotton growing states.

There has been a lessening demand for cotton cloth during the last ten years and it is probable that in the United States under present conditions there are too many spindles in place for the demands of the market. Some have estimated that there are 15 per cent more than necessary. The Northern mills with the higher cost of production have suffered because of this and it has resulted in the closing of many factories. The tendency to reduce wages in the North has been resisted by persistent strikes.

WOOLEN MANUFACTURING

The manufacture of woolen clothing developed early in the history of civilization. The household was the seat of the industry for many centuries. It was not until 1790 the year of the first cotton mill that wool carding by machinery was instituted and the first woolen mill put in operation in the United States.

The classification of wool manufactures differentiates between woolen and worsted goods. Woolen yarn is made from wool that is carded and loosely spun; worsted yarn, from wool that is combed and the thread is twisted until it becomes hard. This distinction arose originally from the length of the fiber; all long fiber wool was combed so that the fibers were parallel and then spun into worsted while all short fibered wool was carded and treated as short staple cotton is today.

There are no world statistics of wool manufacturing since wool is manufactured in many lands under varying conditions. Sheep are usually raised in countries where clothing must be warm and the making of homespun is a widely distributed occupation in primitive and semi-primitive communities. As life becomes somewhat diversified many of these communities concentrated this work in mills and factories.

Some index of the leading woolen manufacturing nations may be obtained from the table of wool consumption.

TABLE 4 (1925)

France	530,000,000 lbs.	Germany	280,000,000 lbs.
United Kingdom	360,000,000 lbs.	Belgium	75,000,000 lbs.
United States	339,000,000 lbs.	Russia	30,000,000 lbs.

The total world production of wool in 1925 was about 3,000,000,000 pounds and the six principal consuming countries handled about 55 per cent of this. This leaves a large amount, 45 per cent, to be distributed among a great many communities.

WOOL MANUFACTURING IN THE UNITED STATES

There were in the United States in 1925, 832 establishments engaged in producing woolen and worsted goods. Over one-half of these are located in New England and over 80 per cent in New England, New York, Pennsylvania and New Jersey.

The unit used to indicate the productive capacity of a woolen mill is the set of carding machines necessary to prepare the wool for spinning; and in a worsted mill the unit is the combing machine. In order to compare the two a ratio of 2 to 5 is used to estimate the productive capacity of combs to sets of cards.

The table of woolen and worsted mills in part reproduced, issued on July 1st, 1928, now becomes intelligible.

TABLE 7

	Set Cards	*Spindles*	*Combs*
Massachusetts	2,807	1,622,764	1,021
Pennsylvania	1,124	674,372	390
New York	941	295,837	101
Connecticut	661	257,903	40
Rhode Island	630	825,480	489

SILK MANUFACTURING

Silk came to the civilized nations from Japan and China. Silk worm culture has been most successful in regions where the white mulberry thrives, and where labor is cheap. Silk worms were introduced into Italy, France, and Austria successfully and a remarkable expansion of the manufacture of silks resulted. In the United States successive attempts to produce raw silk have been met with failure. Georgia between 1732 and 1758 produced much for those days; attempts in Pennsylvania, Utah, California and Southern New England ended in losses. By the 20th century silk culture had returned to the Orient.

In 1925 Japan exported 56,978,000 lbs.; and China 17,900,000 out of an estimated total world production of 88,050,000 lbs. To this may be added 9,656,000 lbs. from Italy and 2,524,000 from the Near East.

The first silk mill in the United States was built in Manchester, Connecticut, in 1810 and the industry has flourished more than in any other country. During the last twenty-five years there has been a big increase in the use of silk fabrics. In spite of the decreased yardage used by women which has so profoundly affected the cotton industry, the importation of raw silk into the United States has grown from 9,139,617 lbs. in 1900 to 64,290,934 in 1925. In speaking of its favor in this country some one has remarked that 7.2 per cent of the inhabitants of the earth use 60 per cent of all the raw silk. In Europe there has been a decline in imports which means less manufacturing of silk goods. In 1914 Europe imported 57,509 bales of Japan silk and in 1925 this had fallen to 18,849 bales; in the same period the United States increased its importation from 143,965 to 411,909 bales.

SILK MANUFACTURING IN UNITED STATES

In 1923 there were 1,598 establishments in the United States engaged in various kinds of silk manufacture, engaging 137,285 persons. The distribution of this follows:

TABLE 7

	Number	*Value of Product*
New Jersey	754	$183,389,000
Pennsylvania	455	286,073,270
New York	250	105,018,097
Connecticut	39	74,674,044

Ninety per cent of the manufacture is located in New Jersey, Pennsylvania and New York.

Since a large percentage of the laborers are women, a location where industries demanding largely male labor is easily a good locality for silk manufacturing. Thus the iron manufacturing city of Patterson, New Jersey, the coal cities of Scranton and Wilkes-Barre, Pennsylvania, and the cement-making city of Allenton, Pennsylvania, are important silk manufacturing centers.

RAYON

The amount of artificial silk made in the United States in 1913 was 1,500,000 lbs. and 1927 this had increased to 75,000,000 lbs. This industry has arisen largely from the demand for silk fabrics and the falling off of the demand for cotton goods has led many

cotton mills to turn to the weaving of rayon. The name rayon was adopted in 1924 for artificial silk.

European countries have not been behind in the use of this fibre.

Italy has produced 37,000,000 lbs.; England 36,000,000 and Germany 35,500,000 lbs. Nine European countries in 1927 have consumed 177,300,000 lbs of artificial silk. This may account in some degree for the decline in silk manufacturing in Europe.

Rayon was used in the year 1925 about as follows: 28 per cent of it for hosiery; 26 per cent mixture with cotton goods; 16 per cent mixture with silk; and 13 per cent for underwear.

ACCESSORY MANUFACTURES

It is inconceivable that a cotton mill could flourish under the stress of present day competition in a locality far from others of the same kind. The concentration of industries is characteristic, and is based on the present day tendency towards specialization. In the early days of New England cotton manufacturing, a bleachery room for instance was provided; now most mills depend on outside plants for this work.

Where many mills are located within a small radius, there will naturally grow up subsidiary plants. In one sense cotton small wares and cotton laces fall into the class since they buy their yarns. In the city of Pawtucket, Rhode Island there are 18 cotton goods factories, but there are also 29 other industrial plants directly connected with the cotton cloth manufacture. Among them are belting factories, bleacheries, shops for making belt hooks, reeds, reels, spools and knitting machines and manufactures of shoe laces, thread, knit goods and narrow fabrics.

A complete story of the textile industry then in any center of manufacturing must include not only the production of fabrics but also all types of production which is subordinate but essential to the textile mill.

THE GEOGRAPHY OF PALESTINE

BESSIE L. ASHTON
University of Illinois

INTRODUCTION

Palestine* shares with the rest of Syria its importance as a transit ground between the East and the West.[1] "No other land of transition is more important in the historic evolution of the Mediterranean peoples than the highway whose chief stations are Damascus and Jerusalem".[2] One of the oldest roads in the world leads from the Nile via Gaza, the Maritime Plain, Esdraelon, Galilee, Damascus, and Tadmor to the Euphrates, the location being determined by topography and the presence of water. Palestine, however, stands prominently before the world because of its religious significance. The solitary monotony of the desert from which these people came, and the few distractions attending such a life seem to have enabled the human soul to attain a degree of spiritual communion not possible elsewhere. Added to this is the isolation of the plateau of Judea, which permitted the growth of religion and helps explain the fact that it is the home of monotheism and the stronghold of three great religions. Jerusalem is the Holy City alike to Jew, Christian, and Mohammedan.

Palestine is also of unusual interest because it contains one of the most remarkable rift valleys in the world. This down-faulted block, or central depression, extends the entire length of the country and contains the Dead Sea basin, the lowest part of the land surface of the earth. As a topographic feature this great graben has been an important factor in the development of the region in presenting a decided barrier to east-west transportation and communication. The general aspect of the country is bare and rocky, but there are many fertile localities among the hills, which are well watered. Great diversity is found in climate, topography, and rock structure, and human adjustment to each within short distances.

* See map. The boundaries of Palestine shown on the map are those between steppe and desert on the east and south, therefore do not coincide with the political boundary of the British mandate

[1] See "Geography of Syria," *Journal of Geography*, May, 1928

[2] Elisee Reclus, The Earth and Its Inhabitants, p. 354

THE CLIMATE OF PALESTINE

The climate of Palestine, like that of other Mediterranean lands, is characterized by mild winters and seasonal rainfall.[3] Its relatively low latitude, however, forces it to occupy a marginal

position with the trade wind desert, and gives it a very scanty rainfall. The altitude of the interior plateaus, also, gives them winter temperatures too low to represent the true Mediterranean type of climate.[4]

[3] See *Journal of Geography* for further details of climate of this region

[4] W. G. Kendrew, The Climates of the Continents, p. 152

The prevailing westerly winds bring rain to the land in winter and moderate the heat of summer. The sirocco, or south wind, is much less common, tho it is much dreaded, as any wind from the desert is hot and exhausting. It scorches the vegetation and brings with it a mist of fine sand, veiling the sun and "bringing langour and fever to men".[5]

Land and sea breezes blow regularly, which is a significant fact, as, without them, life in Palestine in summer would be almost unbearable. The sea breeze brings not only refreshing temperatures, but carries moisture from the sea far into the land and accounts for the very heavy dews characteristic of the high plains of this region. The moisture from the heavy dews allows the growth of certain crops during the dry summer, for example, sesame and durra, and furnishes water to the pasturing flocks and herds. Its significance can hardly be overestimated in a thirsty land like this. This steady wind is also utilized by the peasants in the winnowing of grain on the threshing floors.

Summer temperatures on the plateau rarely exceed 90°F., tho 122°F. may be reached in the Ghor, which is about 1,300 feet below sea level. Frost seldom occurs on the coast, and never in the Jordan Valley, but it is not infrequent from December to February in the mountains. In the low, hot lands malaria abounds, as well as in the warmer limestone regions where cisterns used to store the winter rains offer breeding ground for mosquitoes, as in Jerusalem, for example. Otherwise the plateau regions have a healthful and invigorating climate.

Nearly all the rain comes in the cooler season, from October to May. With the autumn (former) rains the fall plowing and seeding are done. During the winter rains of January and February about five-ninths of the yearly total falls, soaking the land and giving every canyon and dry wadi of summer a raging torrent. The "latter" rains of March and April are extremely important to complete the maturing of the winter crops before the long summer drouth begins. Snow falls on the highlands during most winters, but none has ever been seen to fall in the tropical Ghor.

Response to the seasonal rainfall shows itself in winter agriculture, selection of drouth resistant crops, and the practice of irrigation. The amount of rainfall varies with latitude, altitude, and exposure to the rain-bearing westerly winds. Highlands have

[5] George Adam Smith, The Historical Geography of the Holy Land, p. 67

more than lowlands, and coastal regions more than the interior. In general it also increases from south to north. Gaza has an annual average of 16 inches, Jaffa 20 inches, Haifa and Jerusalem each 26 inches, while Jericho, in the lee of the western highland has only 8 inches (See map). The amount falling at any one place, however, varies greatly from year to year, and disastrous drouths sometimes occur.

GEOGRAPHIC PROVINCES

Palestine may be divided into (1) the eastern highland, or Trans-Jordania, (2) the rift valley, or Jordan-Dead Sea Depression, (3) the western highland, comprising Galilee, Samaria, and Judea, and (4) the Maritime Plain (Map).

Trans-Jordania

East of the central depression stretches for 150 miles or more a land having many geographic advantages. It has an exceptionally fertile lava or limestone soil, a healthful climate, and it is comparatively well watered. The average elevation is nearly 2,000 feet, giving temperatures seldom over 90°F. in summer. Frosts occur from November to March, snow lies for days at a time, and there is more rain, mist, and cloud, and therefore less rapid evaporation thruout the summer than west of the Jordan. It also receives the refreshing afternoon breeze. It is cut by three large rivers, which flow in deep canyons too far below the surface to be utilized for irrigation, but the numerous springs and streams which feed them, together with the winter snow and rains, moisten the high lands sufficiently for cultivation in a belt varying from 30 to 80 miles in width before it merges into the desert. The one curse of this otherwise favored land is insecurity from the barbarous nomadic hordes to which its position freely exposes it. The existence of subterranean fortresses and towns bespeak its danger, and stories are told of the population of whole cities migrating in a single night to another locality to avoid some new line of Arab invasion.

The northern part of this limestone plateau is the basalt covered plain of the Hauran (Bashan) with a dark red soil of exceptional fertility and retentive of moisture. The central part, or Hauran proper, is a treeless plain, under wheat, or lying fallow for the year, or in pasture. It is a land of harvests. Thru the early part of the day camels bring sheaves in from the fields to the

threshing floors, which lie close to the village walls. Here on the hard trodden earth the sheaves are strewn to a depth of two or three feet, and threshed by sledges drawn over them, or the grain is trodden out by donkeys. When the whole mass is cut and bruised enough, it is tossed with great forks against the afternoon wind, and the winnowed grain carried on camel back to the markets of Damascus or Acre. To the west lies Jaulan, once covered with oak forests, but now possessing only a few isolated woods and groups of trees. It is noted especially for its fine pastures upon which graze cattle, camels, sheep, and goats. The eastern border of this province consists of the lava field of El Leja and the volcanic mountain group of Jebel Druse. El Leja is a tangled mass of congealed lava in which occasional fields of wheat contend for existence with boulders, chasms, and black and jagged peaks. Because of the rugged character of the country it has been the haunt of lawless tribes, which menace the peaceful people of the neighboring plains. The Hauran owes much to the lofty peaks of Jebel Druse (to 6,000 feet), whose streams irrigate a broad belt of fertile country at its base. There are many wooded slopes and picturesque valleys, and nearly all could be cultivated if the stones were cleared away.

South of the Yarmuk is the hilly land of Gilead, whose parallel limestone ridges resemble in geological structure the ridges of eastern Pennsylvania. In aspect it is quite different from the high flat uplands to the north and south, resembling more nearly certain parts of Scotland, with its green glens and streams, hills dotted with trees, and meadows of rich grass. The mountains are relatively high, rendering it comparitively cool, and moist enough to support thin oak and pine forests. It was among the branches of the close set oaks that Absalom met his death, and from the resin of the pines, no doubt, came the "balm of Gilead" of ancient times. As Bashan stands for wealth and accessibility, Gilead represents seclusion and a healthful land of balm. It has been remarkably free from invasion, due to the protection of its hills, and the oaks, among whose branches the Arab dare not drive his camels. Unfortunately, the trees are being cut rapidly for charcoal, as fuel in this region is very scarce. Tho there are dry areas, springs and streams are numerous, and the land remains green far into the summer. There are many pomegranate, apricot, and olive orchards. A considerable part of the product of the vineyards is

made into raisins and exported. On the famous pastures many cattle, sheep and goats graze, in the wadi bottoms are vegetable gardens, and in the wider valleys which offer sufficient space for villages are fields of wheat and barley.

South of Gilead the hills and trees disappear, and the landscape becomes one of bare, lofty moors, with here and there a copse of bush, an indefinite stretch of pasture land rolling off into the eastern desert, broken only here and there by featureless hillocks and "deep, warm valleys." Cutting the plateau deeply and interfering seriously with travel are big wadis running to the Dead Sea, in some of which are permanent streams, but too far below the plateau surface to permit the utilization of their water. The soil is excellent for wheat, which grows with the moisture supplied by the heavy rains and snows of winter, and large tracts of plateau and wadi bottom are under cultivation. More famous still are its pastures, where thousands of cattle, sheep, and goats graze. Most of the area, however, has no permanent settlements, as it lies open to the frequent incursions of hordes of Bedouin nomads from the Arabian desert.

The Jordan-Dead Sea Depression

This hot, deep valley in Christ's time was a busy and prosperous part of the country, but is now barren, treeless, and almost unpopulated. Only one town, Tiberias, survives of the nine large ones which then encircled the Sea of Galilee, and the fishing boats which then provided the famous pickled fish of Galilee have nearly all deserted it.

The Ghor, as the deeper part of this valley is called, is four miles wide in the north, but widens to 14 miles at Jericho near the north end of the Dead Sea. The Jordan is a muddy stream 90 to 100 feet wide with a dangerous zigzag current. In depth it varies from three feet at some of the fords to as much as ten or twelve feet. The channel is too deep for the river to be utilized for irrigation, but from its tributaries sufficient water could be obtained the greater part of the year. Except where the soil is too saline, vegetation is very rank, the extreme heat being equal to a forcing house, and herbage grows shoulder high. Little of it is cultivated, however. The intolerable heat and malaria make the Ghor very unhealthful and it is frequently overrun by nomadic Arabs.

The deepest fifty miles of this narrow valley is occupied by the

Dead Sea, brilliantly blue in color, and so clear that pebbles on the bottom can be counted at a depth of twenty feet. There is five times as much solid matter in solution in it as the ocean contains, which makes the water so dense that wood floats upon the surface as on a mirror, and storm waves beat with the force of a sledge hammer. No fish can live in it, and there is not a dwelling on its coast.

The Western Range

Tho it is not a beautiful land the western range of Palestine is of special interest because it contains Jerusalem, Bethlehem, and Nazareth. The hills are flat-topped ridges of gray, or reddish-gray limestone. Low shrubs grow between the stones or piles of rock, and scarcely any vegetation is seen on the thin soil of the upper slopes. The large area devoted to pasture and the numerous aromatic herbs make it a "land of milk and honey," tho sheep and goats greatly outnumber cattle. Travelers are impressed by the stones, caves, tombs, and ruins. "Never was there a country, not being an absolute desert, as stony. The hill-sides seem one mass of loose rocks, larger or smaller. The olive yards and vineyards are full of stones. Even the cornfields (except in the alluvial soil of the plain of Esdraelon and along the sandy coast) seem to have more pebbles than earth."[6]

This description does not apply so truly to the northern district of Galilee as to the drier and barer Judea, tho even here, there are many bare rock slopes and places of thin soil. The location of Galilee is more favorable than Judea, also, as the more northerly latitude gives heavier rainfall, and proximity to the mountains of Hermon and Lebanon supply it with water stored there far into the dry season. Moreover, part of Upper (Northern) Galilee is capped with basalt, which gives it a soil more retentive of moisture than in the limestone region, therefore it is comparatively well covered with vegetation. There are scattered forest trees on the mountains, and a profusion of the bush in the valleys, while the gentler slopes are covered with fertile grain fields. The most productive portion of the district is the Plain of Esdraelon, a flat expanse of loose, red and black loam, extremely fertile and covered with grain, millet, cotton, tobacco, or the castor-oil plant, one of the richest natural fields in the world. Across this plain is the

[6] Viscount Bryce, Memories of Travel, Impressions of Palestine, pp. 174-175

easiest route into Palestine, and Galilee is crossed by many of the world's most famous highways, one being the great thorofare connecting Damascus with the sea.

Samaria is characterized by accessibility to an even greater degree than Galilee, due to its central position as well as geologic structure. Like Galilee it is a region of folded rocks, giving ridges with valleys and plains between. It can be traversed in almost any direction, its openness explaining the frequency of Biblical reference to the chariot in connection with it. The freedom of the woman of Samaria in conversing with Christ, a strange man, is also typical of the exposure to outside influences. Roads lead in all directions from central Samaria; (1) southwest to Jaffa and Egypt, (2) northwest to the coast at Haifa, (3) north thru the Plain of Esdraelon and past the Sea of Galilee to Damascus, and (4) east to Gilead by the Valley of Jezreel and across the Jordan, which is easier to ford here than farther south; these are a few of the most important. Olive groves, wheat fields, green patches of sesame and millet, and reddish-brown squares of fallow ground give color to the landscape.

While Samaria is the geographic center of western Palestine, and the most important commercially, Judea is the spiritual center, the heart and soul of the country. It is a treeless, bare, and thirsty plateau of horizontal limestone strata. The general impression of Judea is that of bare rock, shadeless slopes, and "wadis that are the dry beds of winter torrents, a mountain fastness secure from its isolation."[7] It is distinctly a pastoral country, upon whose scant herbage graze sheep, goats, and a few cattle. There are no perennial streams, and water is too scarce and the soil too thin for more than mere patches of cultivation. Stones are everywhere, and the land is so rough that every flat space of sufficient size among the hills is utilized. Besides olives and figs, crops of grain and vegetables are cultivated with surprising care by the fellaheen, tho the harvest is often so poor that an American or European farmer would not think it worth gathering.[8] In this dry land cisterns are indispensable, even being depended on to furnish water for cattle.

The chief characteristic of Judea, however, and the one believed to have made possible the nurture of a strong religious

[7] Townsend Mac Coun, The Holy Land in Geography and in History, p. 36

[8] Ellsworth Huntington, Palestine and its Transformation, p. 84.

sentiment, is its seclusion. Isolated by steep and rugged approaches from all sides, this high and broken tableland has been affected little by outside influences. To the north the land slopes to Samaria over a desolate and fatiguing extent of rocky platforms and ridges of moorland. The descent to the Ghor is over the rugged, waterless, and almost uninhabited wilderness with its numerous gorges too narrow and crooked to carry a road. Southward lies the parched land of the Negeb, and the approach from the west is by "the stony windings of the dry valleys" of the cuesta country of the Shephelah, whose "rivers of limestone fragments" offer the only routes to the summit.[9] In fact, the very barrenness of Judea spells security for it, as it lies between the more attractive Jordan Valley and the Maritime Plain.

The Maritime Plain

Beyond the Shephelah the land slopes gently thru the Maritime Plain to the sea. North of Mount Carmel the plain narrows and occurs in patches between the jutting mountain spurs, which, in places, reach the sea. Due to slight submergence, this northern stretch of coastline is comparatively irregular, offering to small boats adequate protection, but for ocean steamers there is no good harbor in all the coast of Syria and Palestine south of the Gulf of Alexandretta. South of Mount Carmel slight emergence has given one of the straightest coasts in the world, and there is no protecting island of any size, or wide river mouth. The shore current also brings silt from the Nile delta to close any harbor made by artificial means. The water offshore is so shallow, too, that vessels large enough to go to sea must anchor a mile from shore, and discharge their loads in lighters in calm weather.

South of Mount Carmel is the Plain of Sharon, chiefly a pasture land and occupied by Bedouins with their black tents and vast flocks of sheep. South of the Auja River is the Philistine Plain, where are gardens and grainfields in the valleys and little hamlets on every mound. Grain, figs, olives, and beans are raised by the Arab fellaheen with moisture furnished only by rains of autumn and the heavy night dews of summer. For oranges and lemons, and other valuable crops, however, water must be applied during the long dry summer, therefore many shallow wells are dug to the high ground water table in the Sharon and Philistine

[9] Ibid, p. 68

Plains. Five miles inland from Jaffa water for irrigation cannot be easily obtained, and the orange and lemon groves come to an end. Beyond this point trees are fewer and consist mostly of almond or olive groves. Altho it has no harbor, Jaffa is the leading commercial center of Palestine, and the center of the orange exporting industry. Near the coast where the ground water table is high enough for water to be obtained easily from wells, the aspect is one of vast grainfields, enlivened by herds of cattle and flocks of sheep. Here the chief difficulty to agriculture is the drifting sand, which has migrated two and one-half miles inland in places. Gaza is the chief city of the southern section and an important market for the desert nomads, who come from 100 miles away to purchase their cloth, weapons, and pottery.[10] It is the outpost of Africa and the door of Asia.

THE FUTURE OF PALESTINE

Change in governmental control and the Zionist movement among the Jews have focused attention on the economic resources of Palestine and possibilities for future development. Evidences of a much larger population in the past are numerous. To what extent, therefore, is growth in population and wealth to be expected?

As is true of Syria, the chief wealth of Palestine lies in the soil. There are no mineral resources of importance, unless it may be the salts in the water of the Dead Sea. Forests are practically all gone, and fisheries offer neither abundance nor variety. Fish from the inland waters are caught for local consumption, but sea fishing is handicapped by shallow water, which forces vessels far out where endangered by winter storms, and summer heat limits consumption to the coastal region. Hydro-electric power is an undeveloped resource, but the high cost of initial installation, the small population and lack of development, which offer only a limited market for the product, and the prevailing lack of capital will retard its use.

Agriculture, too, has its handicaps. Rough topography, thin, poor soil, frequency of drouth, and poverty of the fellaheen must be reckoned with. Methods of cultivation are most primitive, tho better suited to the land than is generally believed. The light iron-

[10] Smith, The Historical Geography, op. cit., p. 76

tipped wooden plow can be used among the stones and drawn by oxen, which are cheaper to keep than horses or mules. It penetrates only a few inches, and the loosening of the surface soil is better for retention of moisture in the ground for summer crops than deep plowing. With it the work can be done quickly immediately after the first rains of autumn. The sickle can be used on stony ground. The threshing sledge is wasteful, but cheap, and it is said to break up the hard straw well, while time and labor mean little to the native after the harvest is reaped.

On the other hand, the climate is admirably adapted to the production of an excellent quality of wheat. It also favors the production of barley, as in the sandy soil near Gaza, where a bright barley much prized by English brewers is obtained. Durra, a summer crop, needs little moisture, and the yield is sixty to eighty fold, thus furnishing a cheap food for the poorer classes. Sesame is the fellaheen's most valued crop, as it yields forty to fifty fold and prepares the ground for wheat. High temperatures permit the growth of a great variety of fruits where water can be obtained, and the dry summers are favorable to the drying of fruits. With extension of irrigation, as in the Jordan Valley, this industry might be considerably extended. The olive crop, now barely equal to supplying local needs might be increased by planting many of the bare slopes to trees, and by more careful attention to harvesting. A good crop is obtained only in alternate years, probably due to injury to the trees in the beating administered in gathering the crop. Livestock raising is a universal occupation, tho little attention is given to improving the breed. Cattle are small and give little milk, due to scanty pastures. One of the chief handicaps to the cattle industry is lack of fodder. Milk from sheep, goats, and camels, as well as cow's milk, is used.

More might be made also of the tourist trade. As has been stated, this region is full of interest, because of its historic and religious associations, and with better means of communication, better sanitary conditions, more comfortable hotel accommodations, and the wider advertising, returns from this source could undoubtedly be greatly increased. It is evident, therefore, that there are possibilities for a moderate increase in the population of Palestine. However, it will take time, money, and careful planning to accomplish appreciable results. It must be remembered, also, that Palestine, like Syria, borders the desert and suffers in

the same way from incursions of desert nomads. This is especially true of Trans-Jordania and the Maritime Plain, both of which offer much to the marauder, and are entirely without natural protection from this menace.

TEACHING WITH MAPS IN THE INTERMEDIATE GRADES*

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SELECTING MAPS

The efficient and wise choice of maps for use in geography is not an easy matter, but one requiring careful and thoro study. Those of us who guide pupils in the use of maps must possess an understanding of international relationships and a keen insight into the influence natural environment has upon human activities.

We are living in a new day and geography is a study of the present day. A few years ago it was presented to us by means of almost totally unrelated facts. Elementary schools thruout the country used political maps, exclusively, but today we have come to realize that political boundaries made by man may not influence a nation's industries so much as natural conditions. Therefore we cannot rely upon the use of political maps alone.

The question may be raised, "What maps should be selected for use in teaching geography in the intermediate grades?" A school would do well to begin a series of maps by purchasing a physical-political map of each continent. These maps show important cities, highlands and lowlands, how political boundaries often follow the course of a river or the line of a mountain range. It is possible today to obtain continental physical-political maps which also have smaller insert maps showing relief, rainfall, population and occupations. Using such maps for comparative map study, it is easy to trace the relationships of natural regions to human activities; of surface relief and winds to rainfall; of climate to occupations and occupations to population. To this list should be added a political map of the world and others showing rainfall, vegetation regions, occupations and trade routes of the world.

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The main factor governing the usableness of a map is accuracy. Inaccuracy of facts on maps mislead and confuse pupils. Legibility is almost as important as accuracy. If names or symbols are so numerous that desirable information is lost, the map is practically useless. A map should be chosen for the kind of information it gives rather than the amount it gives. Printing on a wall map should be so clear that it can be seen by pupils sitting in the rear of the room as well as by those who have a closer view. Color plays an important part in the wise selection of maps. Pupils are attracted to a map of harmonious coloring. Aside from their beauty, colors must be of service in distinguishing between lands and waters, highlands and lowlands.

It is sometimes puzzling to teachers of geography how to obtain the greatest service from the maps which they use. Let us always remember that maps are valuable as long as they bring about a clear understanding of the relationship between man's activities and his natural environment. To any one well trained in the use of maps, they tell an interesting story. Just as children learn to read words from the printed page, so should they be trained to read information from the various kinds of maps. Every pupil should learn to read maps accurately. This ability is not acquired in one lesson or in any given number of lessons but thru the repeated and intelligent use of well chosen maps placed in easy access to the pupils.

Important Step in Teaching Map Reading

When a class is introduced to maps it is essential that every child understand the key to each map. The key explains the meaning of different colors used, how to know railroad lines, canals, trade routes, the size of cities and many other facts. Many teachers feel they do not have the time to make a careful study of map symbols with their pupils. But the time is well spent, for as the pupils become more efficient in the use of maps, they can study with appreciation their textbook and wall maps when solving some geography problem. The maps have become their tools of information.

Maps and Place Geography

One important use of physical-political maps is for locating places. Many adults have no idea of the location of some of the places about which they read or hear. They will either dismiss

them from their minds or consult an atlas for their exact location. Most pupils who have not acquired the habit of turning to maps when a strange place is mentioned will do just what many adults do, dismiss the names from their minds, rather than take the time to find the place on a map. Pupils should be encouraged to look thru newspapers for items about other cities and countries. Then a little of the geography period can be given to a discussion of the articles brought in and the places mentioned can be located on the maps. In this way a study of the sometimes dry and uninteresting "Place Geography" is carried on. Oftentimes interesting historical facts or stories can be told about cities and countries given in the list of places to be located. These serve to fix more firmly in the pupil's mind those places the instructor wishes him to remember. Do not allow slovenly methods in pointing out places on maps. When a city is to be located, the pupil should point to the dot or other mark representing the city and not to the printed name. In locating a mountain range he should run the pointer along its full length; or in locating a river, a part of its course must be traced.

USE OF MAPS IN TEACHING REGIONAL GEOGRAPHY

The geographer is interested in the earth chiefly as the present and future home for people. To him the world is a collection of environments which influence human occupations. Since a geographic interpretation of the world must be made upon the interpretations of many different regions it is necessary that the geographer formulate a notion as to the types of regions into which the earth may be divided; and so attempts have been made to organize the study about a small number of regional types. Natural regions are based on several controlling factors: 1) land forms; 2) climate, which includes rainfall and rainfall distribution, heat and winds; 3) character of soil; 4) drainage; and 5) ease of transportation. Land forms are clearly shown on present day maps by use of contrasting colors so that it is easy for the pupils to immediately see mountainous regions or sections where there are plains or plateaus. Such maps are within the scope of the pupil's comprehension. But it will be necessary to help the pupil to understand that geographic regions are also influenced by climate, character of soil, drainage and accessibility for trade. It is the duty of the geography teacher to lead the pupil to consult his

maps and so correlate one with the other that he will learn to know regions where topography is the dominant influence, and those lands where native plant growth is the outstanding feature, and where a particular agricultural industry is so important that it governs the economic life of the people, and regions where climate, topography and native vegetation are very similar to those of another region but the presence of minerals has so influenced the economic life that the regions have ceased to be entirely uniform. Many principles are involved in furnishing the criteria to be used in distinguishing geographical regions. These principles are too intricate for the pupil of intermediate school age and yet the geographic relationships are so clear that he can trace their underlying causes from one map to another. He can gain an understanding of the economic progress of North America when he consults maps which show the natural regions of the continent. The great contrasts in the development of the peoples of South America are explained when the pupil studies maps showing the distinctions in surface regions from the lofty Andes Mountains to the pampas of Argentina; in the rainfall from the Atacama Desert to the Amazon Valley; and in the vegetation from the forests of the Amazon to the grassy plains of Argentina. To understand the wide differences in occupations thruout Europe, it is necessary that the pupil compare, on the maps, the natural environment of the people in the various regions. Again, the pupil may turn to his maps of Asia and study the differences in surface features and other natural regions so that he can gain an understanding of the degree of progress the peoples of Asia have made. Or, we can lead the pupil, as he studies his maps of Africa, to know that the moisture and heat of Central Africa or the deserts of Northern Africa are important reasons why white man can not make these areas his permanent home.

To begin the regional method in teaching geography it might be well to open the eyes of the pupils to the surroundings about them and their meaning. Land relief, natural vegetation and the occupations of the people are at once evident. Conditions governing rainfall and temperature may not be apparent but it will be necessary for the pupils to study them because of their effect on natural vegetation and the industries of the region. Natural resources may or may not be known to the pupils but their presence may be inferred from the principal industries. It is essential that the

pupils have a thoro understanding of the natural conditions under which they live for the home region is bound to illustrate the influences, in one form or another, of natural environment. Cultivated river valleys, grassy plains where cattle graze, manufacturing cities, all point to the significance of the controlling natural factors. During this study, the pupils will be interested in consulting their maps to compare the facts they give concerning the physical aspects of the home region with their personal observation.

Once the pupils appreciate the geographic relationships in their home region they are prepared to trace them to other regions. Then they must rely upon the use of their maps since they have not the opportunity of really seeing these regions. They must carefully consider the maps which show land relief, rainfall, density of population, land use and lines of transportation if they are to interpret the life in the given area. And so, the pupils learn that it is no mere accident that the people of a certain region engage in agriculture while those of another engage in mining and manufacturing. They come to know, too, that whenever similar sets of geographic conditions exist, the people follow similar occupations.

Use of Maps in Solving Geography Problems

Those who use the regional method when teaching geography with maps will find that it can not be separated from the problem method. While the pupils may be interested in learning about a given environment and its influence upon human activities, they will soon ask the question, "Why?" and the problem method may begin.

Let us suppose that a class which is studying South America, has learned that Argentina is a competitor of the United States in the exportation of wheat to Europe. Some one asks, "Why?" To answer this question, a series of maps of United States and South America are needed. The pupils, as they consult these maps will see that the surface features of the wheat growing regions of Argentina and United States are favorable to the raising of wheat; that the temperature and rainfall of both sections aid in this agricultural industry; that the two regions are well supplied with streams for drainage; that neither one is too densely populated for large wheat farms is another fact that presents itself;

there are cities in both sections that may be trading centers for the farmers; and neither area is so well supplied with valuable minerals that their presence would influence the economic life of the people; that neither region is very hilly is clearly shown so that railroads have been built and these can be used for shipping the wheat.

Now, the pupils have formed a definite conclusion as to why certain regions of Argentina can yield enough wheat for home use and for shipment abroad. The next step will be to learn why Argentina does not equal or surpass our nation in this industry. Another careful investigation of maps to find if the physical environment governing the growth of wheat are more favorable in the North Central States than in Argentina, and reading information given in the textbooks will enable the pupils to work out this problem.

By using the regional and problem methods in teaching geography with maps, we can lead the pupils to a better understanding of the rapid growth of a nation, of the reasons for locations of cities, or of the origin of wars. The former method of presenting geography as a mass of facts or as a unit of study based on political boundaries of states and countries was responsible for the too often repeated complaint that geography was an uninteresting subject.

COMPARATIVE MAP STUDY AS A TIME SAVER

Many teachers are often pressed for time and feel that it is next to impossible to cover all the material given in a course of study. Let us remember that the map tells many things better and in a shorter time than can be told in printed words. A class can easily and quickly give the following information on Russia, after making a comparative map study: 1) practically all of Russia is made up of plains; the mountains forming parts of the boundaries; 2) the climate of central Russia is extreme winters and mild summers; of northern Russia, cool summers and extreme winters; of the region surrounding the Black and Caspian Seas, hot summers and cold winters; 3) Russia has a fair amount of rainfall, because the prevailing westerlies which blow over the country have lost considerable moisture as they crossed western Europe; 4) there are extensive coal and iron ore deposits in this country but evidently they are not mined to a great extent because there

are not as many large cities in the regions where these minerals are found as one would expect to see if mining and manufacturing were the most important industries; there are railroad lines in this section so the minerals can be transported to the manufacturing countries of Europe; 5) the leading occupation is farming since the physical factors favor this industry. The crops are the same as those of our Central States and of south central Canada since these areas lie in the same land relief and climatic regions; 6) Russia is well supplied with rivers but those in the north are not open for navigation all the year; the rivers are well connected with canals so that transportation from the interior is fairly good; 7) Russia is not so favorably situated for foreign commerce as Great Britian or as France. This information, together with the study of "Place Names" can be gained in an incredibly short time. All that remains to be done is to direct the pupils to their textbooks for a few facts that maps can not give. Thus a teacher has saved several days of tedious and needless reading and reciting while the pupils have strengthened the habit of turning to their maps in search of valuable information.

IMPORTANCE OF OUTLINE MAPS

Every class, to work efficiently in geography, should be supplied with outline maps. A blackboard or wall outline map of each continent and of the world, and desk outline maps for each pupil provide excellent opportunity for individual work. These maps show coast lines and rivers of the countries, together with lines of latitude and longitude. They seldom contain lettering or names. Pupils can enter upon them certain geographic information which they have read from other maps or from the printed page. The natural regions of a continent can be shown in color on an outline map. Sections raising cotton, or corn, or wheat or rice or some other farm product can each be shown by coloring the region on the outline map. Large cities which manufacture iron and steel goods and those engaged in textile manufacturing can be represented. As a result of repeatedly coloring these various units, pupils come to have a more definite idea of the size, shape, extent and location of these units. They come to realize, too, that the map is of value as a tool for expressing information as well as a tool for seeking information.

CONCLUSION

If we are to teach geography efficiently, we must consider the importance of maps and their function in raising and solving problems, or in furnishing reference material or in serving for testing purposes. May we bear in mind that it is the function of the geography teacher to lead those whose minds are at the impressionable stage, to an understanding of the significance of the influence physical environment has upon human life; and maps, wisely chosen and used afford expert guidance in accomplishing this aim.

SOME GEOGRAPHIC FACTORS IN THE HISTORY OF WASHINGTON, D.C.

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THE INDIAN SETTLEMENT

In the year 1570 a Spanish expedition ascended the Potomac, apparently almost as far as to the place where Washington now stands, and thus began a series of explorations of this waterway by white men which extended over a period of many years. It is from the records of these explorers that we get our first descriptions of the country. It was densely wooded except where the Indians had made clearings for their settlements. These were scattered along the streams, the only thorofares thru the forests, and the source in abundant measure of fish and game. Of all the villages in the whole tidewater region, the largest was situated on the east bank of the Anacostia River, just above its junction with the Potomac, and this and ten or twelve smaller settlements within the present limits of the District of Columbia, or close by, made of this one of the gathering places of the tribes living hereabouts. So important was it that within little more than a mile of where our Capitol now stands was the council house where the chieftains met to discuss tribal affairs.

The reasons for the popularity of this locality are not hard to find. Not only did the relatively mild climate and the abundance of food make a strong appeal, but recent research has shown that Nature had provided here the "greatest aboriginal bowlder quarry known, and the most important implement shops yet observed on

the Atlantic slope," and "one of the most interesting soapstone quarries in the great series extending along the eastern base of the highland from Massachusetts to Georgia." The material quarried for implements consisted largely of quartz or quartzite boulders which were taken from the large number of gravel beds scattered about the Potomac Valley, the most important one being between two and three miles north of where the White House now stands. When in ancient geological times the strand line of the Atlantic Ocean was much further westward than it is now, the Potomac discharged its waters and deposited beds of gravel and boulders within the present limits of Washington. These crystalline boulders were found by the aborigines to be so superior for implements that they were quarried out from the sands and gravels of later formations, and chipped off into crude forms which could be shaped into knives, scrapers, drills, arrows, or spear heads. These were widely distributed, Indians coming, it is believed, from as much as a hundred miles away to provide themselves with these blanks to be shaped at their leisure. From the soapstone veins in the locality, blocks were cut and shaped into pipes, pots, cups, and similar articles, also in great demand. The region was of importance, therefore, in Indian times, because industry and commerce flourished to an unusual degree, and because here was located the capital city of several tribes.

THE YOUNG PORT

By the time the first white men came to make their homes where Alexandria now stands, probably 1695, the Indians of this locality had been so harassed by other tribes and so oppressed by the English that they had almost disappeared. Their place was taken by industrious English, Scotch, and Irish immigrants who were attracted by the fertile soil and the abundance of game.[1] They established themselves along the Potomac and its tributaries, the

[1] Henry Fleete, an English trader and explorer who in 1632 ascended the river as far as Great Falls, wrote in his diary: "On Monday, the 25th of June, we set sail for the town of Tohogae, when we came to an anchor about two leagues short of the Falls, being in the latitude 41, on the 26th of June. This place without all question is the most pleasant and healthful place in all this country, and most convenient for habitation, the air temperate in summer and not violent in winter. It aboundeth with all manner of fish. The Indians in one night will catch 30 sturgeons in a place where the river is not above twelve fathoms broad. And as for deer, buffaloes, bears, turkeys, the woods do swarm with them, and the soil is exceedingly fertile." Georgetown later arose on the site of Tohogae.

main settlements in the vicinity being where Alexandria, Georgetown, and Bladensburg now stand. So favorable was the situation of these villages that they made a very rapid development for their time. Bladensburg was before the Revolution one of the chief tobacco ports of the new world, many vessels from Europe sailing up the Anacostia to take on tobacco at its wharves. When the town of Alexandria was organized in 1749 it was known as a center of refinement and wealth, such families as the Fairfaxes and the Lawrence Washingtons being prominent in local affairs. "Warehouses crowded with tobacco and flour and corn lined its docks, and fleets of merchant vessels filled its harbor." It was to Alexandria in 1755 that King George II sent a fleet of warships and transports bearing troops under the command of General Braddock to assist in the capture of Fort Duquesne. In 1791 Georgetown was in the opinion of George Washington, "the greatest tobacco market in the state if not in the Union." Regular sailings were made between Georgetown and English ports and the Georgetown exporting and Importing company traded extensively with the West Indies. It was a great fish and flour market but tobacco was most in demand by foreign purchasers, the regulations regarding inspection being so strict that the quality was practically guaranteed.

THE YOUNG CAPITAL

When the matter of choosing a permanent home for the Federal government was under discussion, Georgetown was one of a large number of towns to seek the honor of becoming the Nation's capital. It early became apparent that the choice would fall upon a site on the Delaware, the Susquehanna, or the Potomac. The decision to locate on the Potomac was not hastily made. For ten years the relative merits of the three streams were sharply debated, and a good deal of personal feeling was aroused at a time when peace and harmony were most needed. Altho the choice was at last the result of a political compromise,[2] "geographical con-

[2] The northern states were for the most part bitterly opposed to a location which seemed to them so remote as the Potomac; the southern states were as strongly opposed to the plan which had been proposed that the debts incurred by the different states during the war, the great burden of which rested upon the North, be assumed by the Federal government. Each side finally yielded, and on July 16, 1790, President Washington approved the act providing for the selecting of a site somewhere on the Potomac River between the Anacostia and the Conococheague, eighty miles further upstream.

siderations were the dominant ones all thro the ten year period of discussion and wire pulling which culminated in the selection of the present site of Washington,'"[3] and it was only the fact that the Potomac possessed undoubted advantages over the other two streams which made it possible for Thomas Jefferson to induce their advocates to yield. The Delaware opened a passageway to the north where new connections were not needed; whereas the valleys of the Susquehanna and the Potomac led to the west, already beginning to assume political and commercial importance.[4] The Susquehanna, however, offered a very indirect route,[5] its water was shallow, and the portages were such that no canal could overcome them. The Potomac was much less winding, and all obstacles to navigation were rapidly being removed thru the efforts of the Potomac Company, of which George Washington was the first president. There were wagon roads leading across the mountains from both rivers, but "Braddock's Road" along the Potomac, was not only shorter, but it had been kept in better condition than had Forbes' road thru the mountain passes of Pennsylvania.

The belief in the superiority of a site upon the Potomac to one elsewhere along the Atlantic coast was expressed by Thomas Jefferson in a letter to George Washington soon after the Revolution, and by Washington in a letter to Arthur Young, December 12, 1793. Jefferson said: "For the trade of the Ohio or that which shall come into it from its own waters of the Mississippi, it is nearer to Alexandria than to New York by 730 miles, and is interrupted by one portage only. Nature then has declared in favor of the Potomac and through that channel offers to pour into our

[3] R. H. Whitbeck, Geographical Considerations in Selecting the Site for the National Capital. *Jour. Geog.*, Apr., 1915, p. 260

[4] George Washington, following the close of the Revolutionary War, took a trip to the Monongahela, and upon his return he wrote to Governor Harrison of Virginia, urging him to lose no time in bringing about some better means of communication with the west than then existed. A little later he wrote to a member of Congress as follows: "Extend the Inland navigation of the eastern waters—communicate them as near as possible with those which run westward; open these to the Ohio; open also such as extend from the Ohio towards Lake Erie, and we shall not only draw the produce of the western settlers, but the peltry and fur trade of the Lakes to our ports—binding the people to us by a chain which can never be broken."

[5] In the debate preceding the passage of the act which fixed the site of the Federal City, James Madison estimated the distance from the sites under discussion on the Susquehanna to Pittsburgh to be 250 miles by land, 500 by water; whereas his estimate of the distance from Georgetown to Pittsburgh was 170 or 180 miles by land, 250 by water.

lap the whole commerce of the Western world." Washington wrote: "The Federal City in the year 1800 will become the seat of the general government of the United States. It is increasing fast in buildings, and rising in consequence; and will, I have no doubt, from the advantages given it by Nature and its proximity to a rich interior country and the western territory become the emporium of the United States." To what extent was the failure of these predictions due to geographical causes?

THE STRUGGLE FOR THE COMMERCE OF THE WEST

By 1800 the Potomac Company had completed its work of rendering the river navigable as far as Cumberland. It had been a tremendous undertaking for those days, comparable, we are told, to the construction of the Panama Canal in ours and was discussed widely in the scientific journals of Europe. The fall of 578 feet in the river had been overcome by locks, the most extensive series of which was at Great Falls, fifteen miles above Washington. The response in the increased amount of freight and decreased prices was immediate. Tobias Lear, friend and at one time secretary of George Washington, writing to Thomas Jefferson in 1796, said that altho the locks at Great Falls were not yet completed there were already thirty boats plying the river, and "such was the demand for them when I was last up (in Feb'y) that one hundred could have had full employment. In the present unfinished state of the work and scarcity of boats, it costs but one-half to bring flour to market in this way for the distance of sixty or seventy miles of what it does by Waggons."

Much trade was also carried on thru Georgetown by team, as, in addition to Braddock's road to the westward, there were roads to Fredericksburg, Winchester, and northward to Baltimore and Annapolis, and when in 1820 the Cumberland Road was opened from Cumberland to Wheeling, thus linking the Potomac with the Ohio by what was a model road for the time, the supremacy of the Potomac cities seemed assured. Great processions, we are told, of farmers and freight were soon making use of it, and passengers and produce came from as far westward as Cincinnati, Louisville, and St. Louis. The price of real estate advanced sharply and Washington was thought to be on the eve of a great development.

Certain as seemed its future, however, forces were at work which were destined to bring about great and unforeseen changes.

The Industrial Revolution in Europe had ushered in an era of roadmaking and canal construction, and the greatest interest was being taken in improving all forms of conveyance. The invention of the steamboat in 1807, the discovery that commerce could move faster over land if rails were provided for the wagons, and finally the application of steam to the locomotive, soon revolutionized all

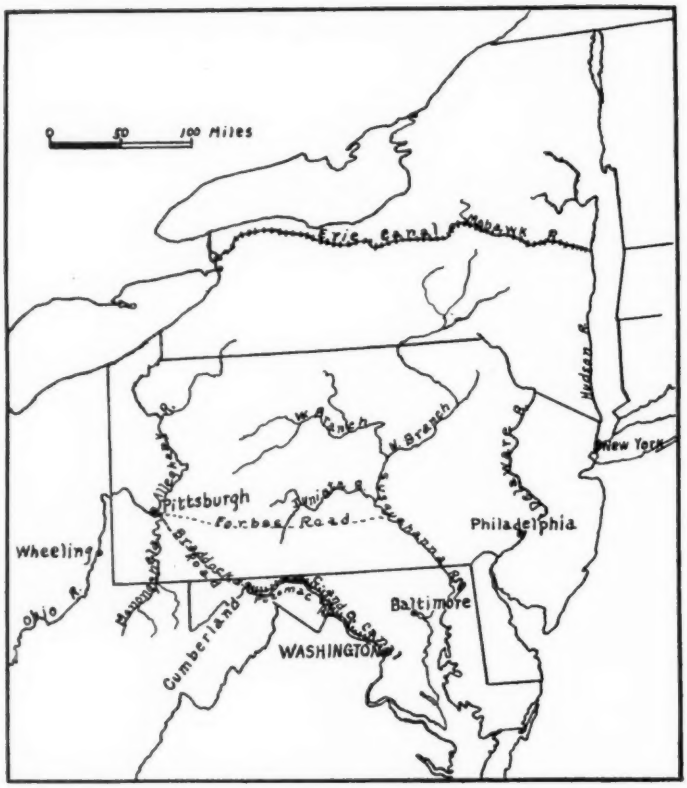

FIG. 1. Sketch map showing the waterways connecting the Atlantic Coast with the Ohio country.

existing ideas of transportation. About the same time the western part of the state of New York was freed from all claims by French, British, and Indians, and the tide of immigration which had made its way up the Hudson and along the lower course of the Mohawk, but had been held back from further advance by these human barriers, now swept over the low divide to the Lakes and to the Ohio Valley. As the pioneers made their way westward they sent back by the route over which they had just come, furs, timber, and grain.

Then New York saw that its opportunity had come, and in 1825 opened the Erie Canal.

The effect as described by Miss Semple was as follows:

"The Erie Canal fixed the destiny of New York City, forced it rapidly to preëminence as the national port of entry, and as the center of our export trade. It shifted the great trans-Allegheny route away from the Potomac, out of the belt of the slave-holding agricultural South to the free, industrial North, and placed it at the back door of New England, whence poured westward a tide of Puritan emigrants, infusing elements of vigorous conscience and energy into all the northern zone of states from the Genesee River to the Missouri and Minnesota. The prairie lands which these new Westerners cultivated were, by means of the Lakes and Erie Canal, made tributary to the growing metropolis at the mouth of the Hudson. New York became now commercially, as formerly it had been in a military sense, the keystone of the Atlantic shore arch. Baltimore, Philadelphia, and Boston lost much of their importance, and did not regain it even in part until railroads enabled them to re-establish interior connection."

The cities to the south still felt that something could be done to regain the trade which they saw slipping from their grasp. Philadelphia attempted to make canal connections with the west, but the parallel ridges of the mountains and the steep Allegheny Front made a continuous waterway impossible of achievement. The residents of the Potomac ports, abandoning all hope of holding their own in commerce if they depended on the Potomac, which was, after all, full of rocks and in times of low water not to be navigated in many places by loaded boats, issued a charter to the Chesapeake and Ohio Canal Company to make a canal parallel with the river as far as to Cumberland, and on July 4, 1828, ground was broken.

The occasion was marked by great rejoicing. President Adams took part in the ceremonies, and most of the members of Congress were present. The President of the Company spoke as follows:

"Fellow Citizens: There are moments in the progress of time which are counters of whole years. There are events the monuments of which, surviving every other memorial of human existence, eternize the nation to whose history they belong, after all other vestiges of its glory have disappeared from the globe. At

such a moment we have now arrived; such a monument we are now to found."

The Committee which had recommended the construction of the canal had predicted a great saving to the community in the price of fuel, grain, meat, marble, iron, lumber, and an increased demand for the manufactures of the city. The price of land in Washington and beyond the mountains went up as soon as the project was decided upon as it had done with the opening of the Cumberland Road. Nevertheless there was a feeling of anxiety because on the very day that the canal was begun the first spadeful of earth was turned at Baltimore for the Baltimore and Ohio Railroad. A group of Baltimoreans, convinced that their city could profit but little by the Chesapeake and Ohio Canal, and distressed to see so much of their western trade diverted to the Mohawk, had cast the die and were wholeheartedly entering upon a bold experiment.

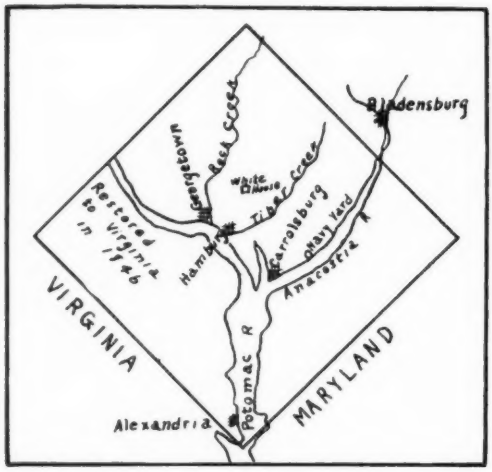

FIG. 2. Sketch map of the original boundaries of the District of Columbia—the "Ten Mile Square"—showing several villages occupying the site where the city was built. (Adapted from Spark's Expansion of the American People, p. 178.)

The report of Mr. Philip E. Thomas which had spurred the citizens of Baltimore to action said in part:

"Baltimore lies two hundred miles nearer to the navigable waters of the West than New York, and about one hundred miles nearer to them than Philadelphia; to which may be added the important fact that the easiest and by far the most practicable route through the ridge of mountains which divides the Atlantic from the Western waters is along the depression formed by the Potomac in its passage through them."

By the year 1854 four railroads had made their way across the Appalachians, and because of the service which they were able to render in winter as well as in summer, and because of the greater speed which they began to acquire and the reduced number of load-

ings and unloadings, they began to draw heavily upon the freight which had hitherto been water-borne. The first of the four roads to be completed, however, was not the Baltimore and Ohio, which, because of steep grades and high elevations, met with many delays. It was the New York Central, which, following the Hudson and Mohawk Valleys and crossing the low divide 445 feet in elevation, first tapped the West in 1851. In the same year a second road, the Erie, made its way from the Hudson River largely along the Susquehanna and its tributaries, to Lake Erie over a divide of 1400 feet. The Baltimore and Ohio reached Cumberland in 1842, but the ascent over the water shed 2620 feet in height proved difficult and expensive, and it did not reach the Ohio River until 1853. The following year saw Philadelphia connected with the West by means of the Pennsylvania Railroad, which followed the old line of tramways and canals, ascending the Allegheny Front at an elevation of 2161 feet. All these roads, as may be seen, made use as far as possible of the old canal routes, because canals and railroads alike sought the passages thru the mountains which the streams had worn.

Thus it will be seen that by the time the Cheasapeake and Ohio Canal reached Cumberland, which was not until 1850, because of the many difficulties encountered, the Erie Canal had for twenty-five years had connection with the Great Lakes and thru their tributaries with the heart of the country. Moreover, by the time it was completed interest in water transportation was waning, so that it was never extended to the Ohio River, as had been the original plan. Furthermore, by the time the railroad had linked the Potomac ports with the Ohio, the cities to the northward were already connected by roads crossing at lower elevations. It is not surprising, therefore, to see the western trade diverted from Alexandria and Georgetown to Baltimore, Philadelphia, and New York. The commerce of the Potomac ports entered upon a period of decline, and has never since assumed any but local importance. The belief of Thomas Jefferson that Nature would pour thru the Potomac the whole commerce of the western world, and the dream of George Washington that the city bearing his name would become the emporium of the United States have remained unfulfilled.

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GEOGRAPHICAL NEWS

A new map of the Antarctic, in two colors, has just been prepared by the American Geographical Society. The scale is 1:4,000,000, or about 60 miles to the inch. It is printed in four sheets, each quadrant being 32 by 32 inches.

This is the largest map of the Antarctic thus far published. It incorporates the work of all the major explorations of the past. All known physical features including ice forms are shown, the elevations and depths being given in meters. The most interesting series of individually determined points shown are those made by Scott and Amundsen on their respective routes to the south pole. The position of the south magnetic pole is also indicated, and the lines of equal magnetic variation for 1927. Wind roses showing the direction and velocity of the wind are inserted on the margin of the map.

Accompanying the map is a navigational chart of the same area but on the smaller scale of 1:12,000,000. These charts will be used by the Byrd and Wilkins expeditions when plotting their courses during a flight. It is hoped that the map and chart may be used by schools as a base on which to plot new coast lines, ice formations, base camps, mountains, airplane routes, and other data as described in radio dispatches from these expeditions. To facilitate the mapping of these discoveries, the parallels and meridians are drawn for each single degree. Thus far only narrow belts of this vast area, probably twice the size of the United States, have been mapped. It should be interesting indeed for those at home to reconstruct, by the help of the radio, the blank spaces on the map, even as those in the Antarctic expeditions will soon be doing.

The Connecticut Council of Geography Teachers met in four sections October 26, in conjunction with the Connecticut Teachers Association. Ellen Churchill Semple addressed two of the sections and Leonard Packard, President of the National Council of Geography Teachers, addressed the other two. A goodly number of those present expect to attend the National Council meetings at New York, December 26-27.

The Geography Club of Western Pennsylvania held its annual fall meeting on October 20. About 200 were in attendance. Nora Zink of the Indiana State Teachers College and Edna Gray of the Slippery Rock State Teachers College spoke at the session. The exhibit was in charge of Wm. Shrawder of Schenley High School.

The Minnesota Council of Geography Teachers met in Minneapolis on November 9. The speakers at the meeting were Raphael Zon, Director, Lake States Forest Experiment Station, Anna C. Larson of the St. Cloud State Teachers College, and Robert

S. Platt of the University of Chicago. Mr. Zon and Mr. Platt also addressed the Social Science Studies Section of the Minnesota Education Association which was also in session at this time.

The increase in mineral and agricultural production in the South is reflected in its use of industrial explosives. In 1927 this amounted to 30 per cent of our total consumption. This great demand for explosives has resulted in the South's becoming a manufacturer of explosives. These explosives are used principally in mining, in oil prospecting, in blasting ditches and clearing land, in road and dam construction, and in the destructive distillation of the pitch pine.

What fabrics shall we wear if we wish to derive the maximum benefit from ultra-violet rays? The Bureau of Standards has recently demonstrated the superiority of bleached white materials in the transmission of ultra-violet rays thru the thread. Woolen fabrics have only about one-half the transparency of white cotton.

A number of posters, originally designed for some European railways, may be secured at nominal prices from the Challenge Books and Pictures, Ltd., 24 Great Russell St., Bloomsbury, W. C. 2, London. These posters are copies of paintings done by prominent artists to stimulate interest in travel. Naturally the landscapes are frequently tinged with the imagination of the artist who has enriched the scene with "the romance of the thing." Might not this subtle appeal be occasionally stimulated in our geography classrooms thru the use of these colorful posters?

The Nebraska Chapter of the National Council of Geography Teachers will continue publishing its annual five-issue *Bulletin*. E. E. Lackey of the University of Nebraska is the editor. The subscription is 25 cents. Its aim is to promote greater skill in the teaching of geography.

"Geography Source Material" is the title of a new 14 page mimeographed bulletin, prepared by Anne M. Goebel of Kansas State Teachers College, Emporia. Its cost is 20 cents. It contains the addresses of firms from whom free circulars, pamphlets, charts, and exhibits may be obtained.

The following changes in place names have been made recently: Punta Arenas (Chile) changed to Magallanes; Peking (China) to Peiping; the Department of Minas (Uruguay) to Lavalleja; Fredrickshold (Norway) to Halden.

The American Geographical Society of New York has recently instituted a school of surveying. Primarily it is a place of instruction in map making, but it also functions as a center of information for everything pertaining to surveying. A specialized library and a valuable collection of modern surveying instruments are being assembled. The instruction given is suited to individual needs. The school is situated on the fourth floor of the Society's building, Broadway at 156th Street, New York City.

A new Geological survey map has been issued covering the Salton Basin of California, the largest area in America below sea level. The scale is about one inch to one mile. It may be purchased for 25 cents from the Geological Survey of Washington, D.C.

The tenth (centenary) edition of Stieler's Atlas of Modern Geography is the work of Dr. Haack and the Justus Perthes Geographical Institute. It contains 108

double page maps, size 16 by 21 inches and 146 smaller inset maps. It is bound in two volumes. A. J. Nystrom & Company, Chicago, are the American distributors.

The National Foreign Trade Council, New York, is urging the teaching of more Spanish in the schools. They believe this appeal is justifiable in view of our probable future increased trade relations with Latin America. Since 1913 our exports to these countries have trebled. Business men believe that the use of Spanish has helped promote this trade thru the greater intimacy and closer understanding of Latin American markets, culture, and psychology. Then, too, the development of transportation and communication that accompanied this trade expansion has stimulated greater travel between the two Americas and has also led to more opportunities for favorable investment of American capital. The Trade Council believes that this expansion necessitates an ever increasing need of the use of the Spanish language.

GEOGRAPHICAL PUBLICATIONS

Great Britain: Essays in Regional Geography, 486 pp., 54 maps and diagrams. Cambridge University Press. (Macmillan Co., N.Y. American Agents). 1928.

This volume was prepared thru the cooperation of twenty-six authors, and was published on the occasion of the Twelfth International Geographical Congress held at Cambridge, England, during July, 1928. In an introductory note, Sir E. J. Russell, one of the ablest of British specialists in agricultural geography and land utilization, presents clearly the thoroly scientific basis to geography which characterizes the British school. This scientific approach is reflected in the different essays, prepared by the leading British scholars in geography who have contributed to the volume. Each one builds his geography upon a knowledge of the physical features and of the climate of the region which he is studying. They have no hesitation in presenting the geologic structure, the geomorphology, and the climatology, and they usually present these before endeavoring to interpret the human phases of geography.

Following the introduction there is a brief but masterly treatment of the climate of Great Britain by Hugh Robert Mill.

The lands of England, Wales, and Scotland were divided into twenty-three distinct regions. Most of them are clearly defined on the basis of their physical features, but some owe their definition to the limits of an economic or industrial community. To select any one of the essays, or to call attention to the work of any one of the authors of the regional essays would involve partiality. The essays embody the results of careful field studies and in many of them there are very helpful diagrams and maps.

This is the first series of such essays, prepared by men familiar with their local regions, that has yet been assembled for any one country in the world. The British geographers have made a worth while contribution to the literature of geography, and they have given in their essays models of geographic description. This volume will undoubtedly serve for many years as the best source of information on the regional geography of Great Britain. It was edited by Alan G. Ogilvie of the University of Edinburgh.

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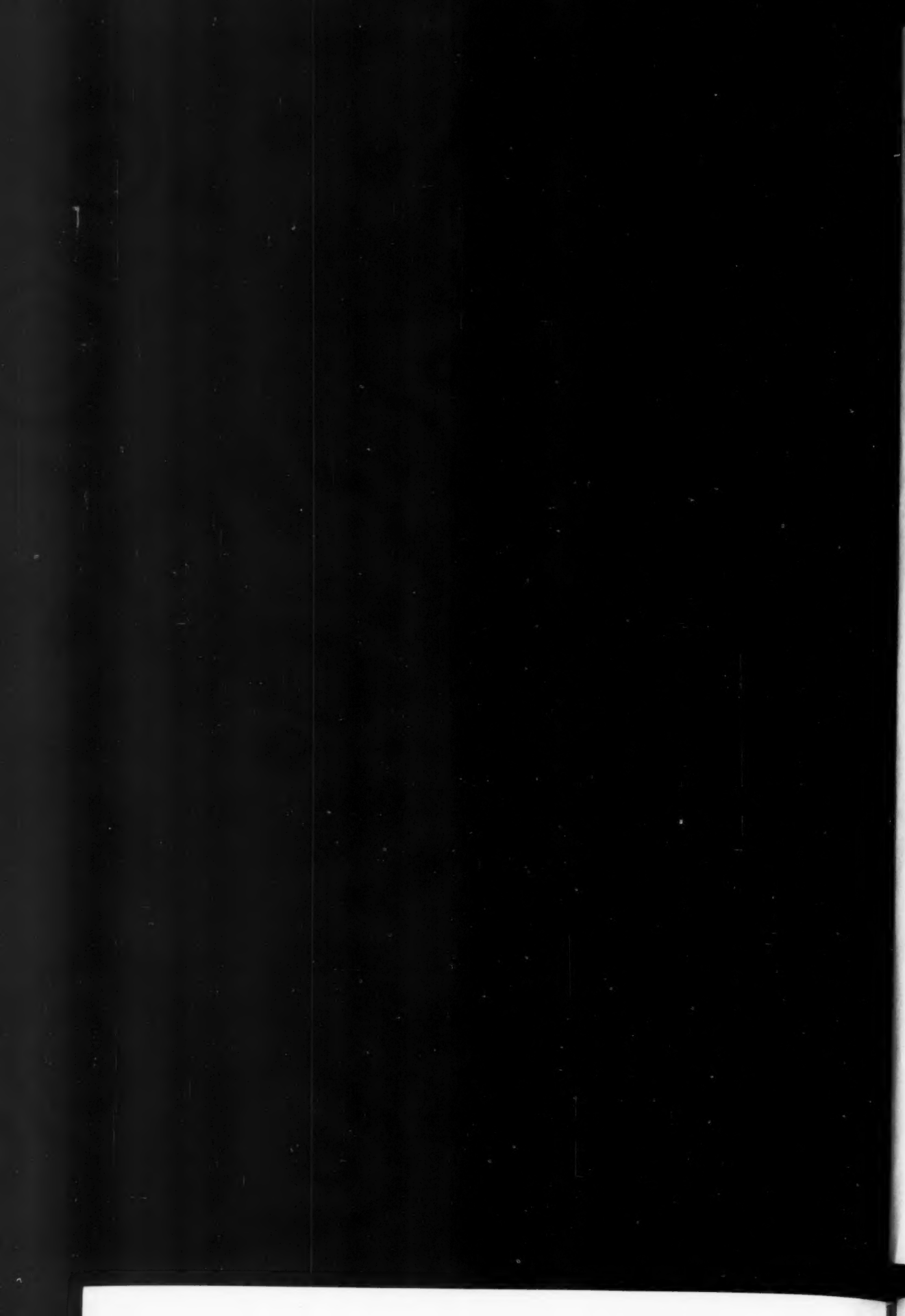
Clark University



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NATIONAL COUNCIL MEETING

The annual meeting of the National Council of Geography Teachers will be held in Milbank Chapel, Teachers College, Columbia University, New York, December 26, 27, 1928. The Preliminary Program appeared in the *Journal* for November. Reduced railway rates of one and one-half fare for those attending the meetings have been granted by nearly all railways in the United States and Canada. The following Southwestern lines *do not* grant rates: Arkansas & Louisiana-Missouri Ry.; Ft. Smith & Western Ry.; Graysonia, Nashville & Ashdown Ry.; Kansas, Oklahoma & Gulf Ry.; Louisiana & Arkansas Ry.; Mississippi River & Bonne Terre Ry.; National Railways of Mexico.

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